

WHAT IS CLAIMED IS:

1. An image acquiring device for performing time lapse imaging, comprising:

5 an imaging portion which performs imaging of a subject;

a time lapse imaging condition setting portion which sets a time lapse imaging condition including at least an exposure time and an imaging interval, prior to the imaging of the subject by the imaging portion;

10 a determining portion which determines a contradiction of the time lapse imaging condition set by the time lapse imaging condition setting portion according to a predetermined criterion; and

15 a presenting portion which presents at least information relating to the contradiction of time lapse imaging condition based on a determined result by the determining portion.

2. The image acquiring device for performing time lapse imaging according to claim 1, wherein the  
20 determining portion determines the contradiction of the time lapse imaging condition by using a relation between the exposure time and the imaging interval as the predetermined criterion.

3. The image acquiring device for performing time  
25 lapse imaging according to claim 2, further comprising:

an avoiding condition generating portion which generates a plurality of time lapse imaging conditions

for avoiding the contradiction of the time lapse  
imaging condition based on the determined result by the  
determining portion, and causes to present information  
relating to the plurality of time lapse imaging  
5 conditions by the presenting portion;

a selecting portion which selects one of time  
lapse imaging condition from within the information  
relating to the plurality of time lapse imaging  
conditions presented by the presenting portion; and

10 an instructing portion which instructs the imaging  
portion to execute time lapse imaging based on the time  
lapse imaging condition selected by the selecting  
portion.

4. The image acquiring device for performing time  
15 lapse imaging according to claim 3, further comprising:

an exposure time setting portion which sets the  
exposure time set by the time lapse imaging condition  
setting portion to the imaging portion; and

a gain setting portion which enables setting of  
20 gain of an output signal from the imaging portion,

wherein, when the determining portion determines  
the contradiction of the time lapse imaging condition  
in which the exposure time is longer than the imaging  
interval, the avoiding condition generating portion  
25 changes a set value of the exposure time by the  
exposure time setting portion to an exposure time  
shorter than the imaging interval, and sets a value

of the gain set by the gain setting portion based on a value determined from a ratio of the exposure time after change and the imaging interval.

5        5. The image acquiring device for performing time lapse imaging according to claim 3, further comprising:

        an exposure time setting portion which sets the exposure time set by the time lapse imaging condition setting portion to the imaging portion; and

10        a brightness correcting portion which enables correction of brightness of an image by an output signal from the imaging portion,

        wherein, when the determining portion determines the contradiction of the time lapse imaging condition in which the exposure time is longer than the imaging interval, the avoiding condition generating portion  
15        changes a set value of the exposure time by the exposure time setting portion to an exposure time shorter than the imaging interval, and sets a value for correcting the brightness of the image by the  
20        brightness correcting portion based on a value determined from a ratio of the exposure time after change and the imaging interval.

        6. The image acquiring device for performing time lapse imaging according to claim 3, further comprising:

25        an exposure time setting portion which sets the exposure time set by the time lapse imaging condition setting portion to the imaging portion;

a gain setting portion which enables setting of gain of an output signal from the imaging portion; and

a brightness correcting portion which enables correction of brightness of an image by the output  
5 signal from the imaging portion,

wherein, when the determining portion determines the contradiction of the time lapse imaging conditions in which the exposure time is longer than the imaging interval, the avoiding condition generating portion  
10 changes a set value of the exposure time by the exposure time setting portion to an exposure time shorter than the imaging interval, and sets a value of the gain set by the gain setting portion to a value determined from a ratio of the exposure time after  
15 change and the imaging interval, and when a set gain value exceeds a maximum gain value, sets the maximum gain value as the value of the gain set by the gain setting portion and sets a value for correcting the brightness of the image by the brightness correction  
20 part based on a value determined from a ratio of the value of the gain determined from the ratio and the maximum gain value.

7. The image acquiring device for performing time lapse imaging according to claim 1, wherein the imaging  
25 portion includes an imaging portion of a microscopic image acquiring device.

8. An image acquiring method for performing time

lapse imaging, comprising:

preparing an imaging portion which performs  
imaging of a subject;

5        setting a time lapse imaging condition including  
at least an exposure time and an imaging interval,  
prior to the imaging of the subject by the imaging  
portion;

10       determining a contradiction of the time lapse  
imaging condition set by including at least the  
exposure time and the imaging interval according to  
a predetermined criterion; and

15       presenting at least information relating to the  
contradiction of the time lapse imaging condition based  
on a determined result of the contradiction of the time  
lapse imaging condition, by a presenting portion.

20       9. The image acquiring method for performing time  
lapse imaging according to claim 8, wherein the  
determining determines the contradiction of the time  
lapse imaging condition by using a relation between  
the exposure time and the imaging interval as the  
predetermined criterion.

10. The image acquiring method for performing time  
lapse imaging according to claim 9, further comprising:

25       generating a plurality of time lapse imaging  
conditions for avoiding the contradiction of the  
time lapse imaging condition based on the determined  
result of the contradiction of the time lapse imaging

condition, and presenting information relating to the plurality of time lapse imaging conditions by the presenting portion;

5       selecting one of time lapse imaging condition from within the information relating to the plurality of time lapse imaging conditions presented by the presenting portion; and

10       instructing the imaging portion to execute time lapse imaging based on the time lapse imaging condition selected from within the plurality of time lapse imaging conditions.

11. The image acquiring method for performing time lapse imaging according to claim 10, further comprising:

15       preparing an exposure time setting portion which sets the exposure time by the setting of the time lapse imaging condition to the imaging portion; and

20       preparing a gain setting portion which enables setting of gain of an output signal from the imaging portion,

25       wherein, when the determining determines the contradiction of the time lapse imaging condition in which the exposure time is longer than the imaging interval, the generating the plurality of time lapse imaging conditions changes a set value of the exposure time by the exposure time setting portion to an exposure time shorter than the imaging interval, and

sets a value of the gain set by the gain setting portion based on the value of the gain determined from a ratio of the exposure time after change and the imaging interval.

5           12. The image acquiring method for performing time lapse imaging according to claim 10, further comprising:

          preparing an exposure time setting portion which sets the exposure time by the setting of the time lapse  
10       imaging condition to the imaging portion; and

          preparing a brightness correcting portion which enables correction of brightness of an image by an output signal from the imaging portion,

          wherein, when the determining determined the  
15       contradiction of the time lapse imaging condition in which the exposure time is longer than the imaging interval, the generating the plurality of time lapse imaging conditions changes a set value of the exposure time by the exposure time setting portion to an  
20       exposure time shorter than the imaging interval, and sets a value for correcting the brightness of the image by the brightness correcting portion based on a value determined from a ratio of the exposure time after change and the imaging interval.

25           13. The image acquiring method for performing time lapse imaging according to claim 10, further comprising:

preparing an exposure time setting portion which sets the exposure time by the setting of the time lapse imaging condition to the imaging portion;

5 preparing a gain setting portion which enables setting of gain of an output signal from the imaging portion; and

preparing a brightness correcting portion which enables correction of brightness of an image by the output signal from the imaging portion,

10 wherein, when the determining determines the contradiction of the time lapse imaging condition in which the exposure time is longer than the imaging interval, the generating the plurality of time lapse imaging conditions changes a set value of the exposure  
15 time by the exposure time setting portion to an exposure time shorter than the imaging interval, and sets a value of the gain set by the gain setting portion to a value determined from a ratio of the exposure time after change and the imaging interval,  
20 and when a set gain value exceeds a maximum gain value, sets the maximum gain value as the value of the gain set by the gain setting portion and sets a value for correcting the brightness of the image by the brightness correcting portion based on a value  
25 determined from a ratio of the value of the gain determined from the ratio and the maximum gain value.

14. The image acquiring method for performing time



lapse imaging according to claim 8, wherein the imaging portion includes an imaging portion of a microscopic image acquiring device for fluorescence photography.

15        15. An image acquiring device for performing time lapse imaging, comprising:

          imaging means for performing imaging of a subject;

          time lapse imaging condition setting means for  
          setting a time lapse imaging condition including at  
          least an exposure time and an imaging interval, prior  
10        to the imaging of the subject by the imaging means;

          determining means for determining a contradiction  
          of the time lapse imaging condition set by the time  
          lapse imaging condition setting means according to  
          a predetermined criterion; and

15               presenting means for presenting at least  
          information relating to the contradiction of the time  
          lapse imaging condition based on a determined result by  
          the determining means.

20        16. The image acquiring device for performing  
          time lapse imaging according to claim 15, wherein  
          the determining means determines the contradiction of  
          the time lapse imaging condition by using a relation  
          between the exposure time and the imaging interval as  
          the predetermined criterion.

25        17. The image acquiring device for performing  
          time lapse imaging according to claim 16, further  
          comprising:

avoiding condition generating means for generating  
a plurality of time lapse imaging conditions for  
avoiding the contradiction of the time lapse imaging  
condition based on the determined result by the  
5 determining means, and causing to present information  
relating to the plurality of time lapse imaging  
conditions by the presenting means;

selecting means for selecting one of time lapse  
imaging condition from within the information relating  
10 to the plurality of time lapse imaging conditions  
presented by the presenting means; and

instructing means for instructing the imaging  
means to execute time lapse imaging based on the time  
lapse imaging condition selected by the selecting  
15 means.

18. The image acquiring device for performing  
time lapse imaging according to claim 17, further  
comprising:

exposure time setting means for setting the  
20 exposure time set by the time lapse imaging condition  
setting means to the imaging means; and

gain setting means for enabling setting of gain of  
an output signal from the imaging means,

wherein, when the determining means determines  
25 the contradiction of the time lapse imaging condition  
in which the exposure time is longer than the imaging  
interval, the avoiding condition generating means

changes a set value of the exposure time by the exposure time setting means to an exposure time shorter than the imaging interval, and sets a value of the gain set by the gain setting means based on the value  
5 determined from a ratio of the exposure time after change and the imaging interval.

19. The image acquiring device for performing time lapse imaging according to claim 17, further comprising:

10 exposure time setting means for setting the exposure time set by the time lapse imaging condition setting means to the imaging means; and

brightness correcting means for enabling correction of brightness of an image by an output  
15 signal from the imaging means,

wherein, when the determining means determines the contradiction of the time lapse imaging condition in which the exposure time is longer than the imaging interval, the avoiding condition generating means  
20 changes a set value of the exposure time by the exposure time setting means to an exposure time shorter than the imaging interval, and sets a value for correcting the brightness of the image by the brightness correcting means based on a value determined  
25 from a ratio of the exposure time after change and the imaging interval.

20. The image acquiring device for performing

time lapse imaging according to claim 17, further comprising:

exposure time setting means for setting the exposure time set by the time lapse imaging condition setting means to the imaging means;

gain setting means for enabling setting of gain of an output signal from the imaging means; and

brightness correcting means for enabling correction of brightness of the image by the output signal from the imaging means,

wherein, when the determining means determines the contradiction of the time lapse imaging condition in which the exposure time is longer than the imaging interval, the avoiding condition generating means changes a set value of the exposure time by the exposure time setting means to an exposure time shorter than the imaging interval, and sets a value of the gain set by the gain setting means to the value determined from a ratio of the exposure time after change and the imaging interval, and when a set gain value exceeds a maximum gain value, sets the maximum gain value as the value of the gain set by the gain setting means and sets a value for correcting the brightness of the image by the brightness correction means based on the value determined from a ratio of the value of the gain determined from the ratio and the maximum gain value.

21. The image acquiring device for performing time

lapse imaging according to claim 15, wherein the imaging means includes imaging means of a microscopic image acquiring device.